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ABSTRACT

These 55 activity cards were created to help teachers implement a unit on metric measurement. They were designed for students aged 5 to 10, but could be used with older students. Cards are color-coded in terms of activities on basic metric terms, prefixes, length, and other measures. Both individual and small-group games and ideas are included. (MS)

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PRIMARY METRICS

by karen otto, pam gustafson & juanita sorenson

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2

INTRODUCTION

Primary Metric Activity Cards were created to help teachers implement a unit of metric measurement that can be taught in a realistic and "fun" manner. They were designed for the primary student, ages 5-10 years, but can also be used with older students who are being introduced to metric measurement for the first time.

Activities are presented in a logical and sequential manner. They may be used one at a time, in sections, or as a whole. The teacher may use the activities as learning stations, with a small group of children or as independent "enrichment activities." Cards are subdivided and color-coded as follows: basic metric terms-yellow; prefixes-blue; length-green; and other measurements-white.

We hope that these activity cards will help you as a teacher to provide a creative learning environment while teaching metric.

CONTENTS

BASIC METRIC TERMS

1. Roll-A-Cube
2. Metric Mail
3. Shake 'N' Take
4. Musical Eggs
5. Bean Bag Toss
6. Metric Martians
7. Do You See What I See?

PREFIXES

8. Prefix Summary Chart
9-10. Metric Money
11. Metric Match
12-13. Metric Picture Puzzles
14-15. Metric Monkey
16. Fabulous Fishing
17. Get Your Foot in the Door
18. Metric Checker-Check
19. Metric Darts
20. If I Were
21. Metric Mix-Match
22. Smaller-Larger

LENGTH

23. Throw-A-Meter
24. Metric Mice Tails
25. Metric Rope
26. So Big In Metric
27. Balance Beam
28. Licorice Length
29. Metric Maple Tree
30. Pin the Tail on the Monkey
31. Metric Picture Parade
32. Mighty Metric Meal
33. Metric Moose
34. Measure Me-Up!
35. Metric Treasure Hunters
36. Decimeter Detectives
37. Tree Spree
38. Metric Village
39. Metric Graduation Hat
40. Metric Kite Tails

OTHER MEASUREMENTS

41-42. Feed the Metric Bunny
43. Squeeze-A-Liter
44. Metric Volume Pizza
45. Think Metric
46. "Gram" Crackers
47. Postal Problems
48. Right On - Rock Hound
49. Litter Pick
50. Metric Market
51. Temperature Slide
52. Sweet Tooth
53. Metric Munch
54. Linear Leaf
55. Traffic Copter Report

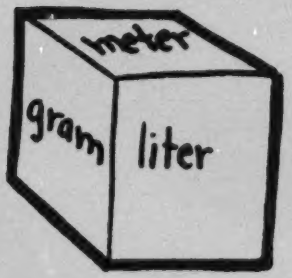
BASIC METRIC TERMS

liter · meter · gram

ROLL-A-CUBE

1

1. Construct a six-sided cube out of tagboard.
2. Print meter, liter, or gram on each of the six sides.
3. Have a child roll the cube, read the word that appears on the face of the cube, and name an object that can be measured with that unit.

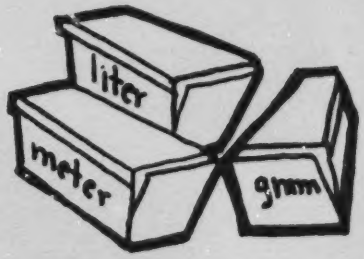


METRIC MAIL

1. Decorate three shoe boxes so that they look like mail boxes. Label one meter, one liter, and one gram.

2. Cut and mount on envelopes small pictures of objects from magazines.

3. Have the children "sort the mail" by placing the picture of the object which is labeled with the unit used to measure it.

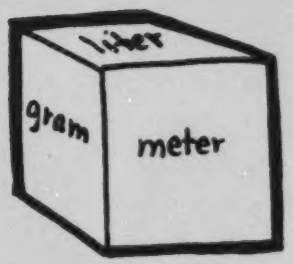


SHAKE 'N' TAKE

3

1. Construct a cardboard cube with the words meter, liter, or gram on each of its sides. Also compile a group of objects or a group of pictures of objects that could be measured with each unit.

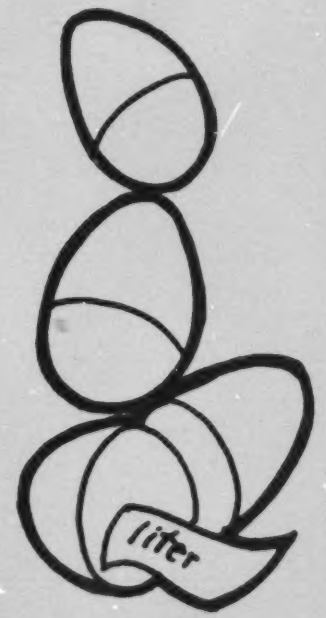
2. Have students take turns shaking the cube and identifying the object in the group that can be measured with that unit. If the student is correct he or she takes the object; if not correct, he or she waits until the next turn to try again. The person with the most objects when all objects in the group are gone is the winner.



MUSICAL EGGS

4

1. Obtain enough plastic Easter eggs so that there is an egg for all but one child in your group.
2. Insert the word meter, liter, or gram in each egg.
3. Have the students sit in a circle and pass the eggs around while playing music.
4. Stop the music. The person who doesn't have an egg is eliminated from the game. The rest of the children open an egg, read the unit of measurement and name an object that can be measured with it. An object can only be named once. A person who names an object for the second time is eliminated.
5. Game continues until there is only one person left. This person is the winner.



BEAN BAG TOSS

1. Obtain three empty "Baskin-Robbins" ice cream containers. Print meter, liter, or gram on each and finish decorating them in an attractive manner.

2. Make or buy nine bean bags, or "nerf" balls.

3. Have the students toss a bag into one of the three containers and name an object that can be measured in that unit.

4. If a student does not correctly name an object for that specific measurement the bean bag must be removed from the container.

5. If desired, points may be given for each correct response.

METRIC MARTIANS

6

1. Draw three faces of Martians, each on a different color of paper. Cut out and paste each to the top of a popsicle stick. Make enough Martians so that each child in the group has one of each color.

2. Have one color Martian stand for meter, the second color for liter, the third for gram.

3. Name an object and have the students hold up the Martian representing the unit that would be used to measure that particular object.

DO YOU SEE WHAT I SEE?

7

1. Divide the class into teams of 5-8 students.

2. Select an object in the classroom and say the following to the students:

   "I see something that can be measured with a _____."
   Use the word meter, liter, or gram.

3. Have each team try to guess what the object is.

4. The team that can name the object first receives a point.

5. The game can continue until a specific number of points are accumulated or a set time limit is reached.

PREFIXES

deka · centi · hecto · kilo · deci · milli

PREFIX SUMMARY CHART

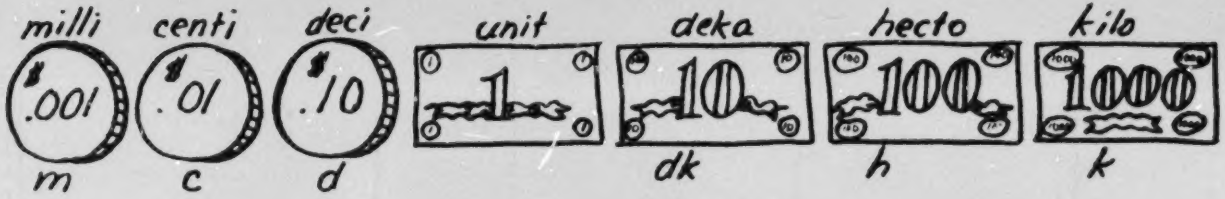
8

PREFIX NAME	PREFIX SYMBOL	PREFIX DEFINITION
kilo	k	1000
hecto	h	100
deka	dk	10
---	--	1
deci	d	.1
centi	c	.01
milli	m	.001

METRIC MONEY: 1

9

1. Draw the metric money onto a piece of tagboard as illustrated below.



2. Cut out the "money" from the tagboard and mount a piece of magnetic strip (magnetic strips are available in any dime store) to the back side of each piece. It is suggested that you check your chalkboards to see if they are magnetic.

METRIC MONEY: 2

3. Place the money on the chalkboard. Then write the prefix word above the money and the prefix symbol below it as illustrated in number I.

4. Give each child a chance to guess how many "dimes" it takes to equal a metric dollar bill, how many metric one dollar bills are needed to equal a metric one-thousand dollar bill and so on.

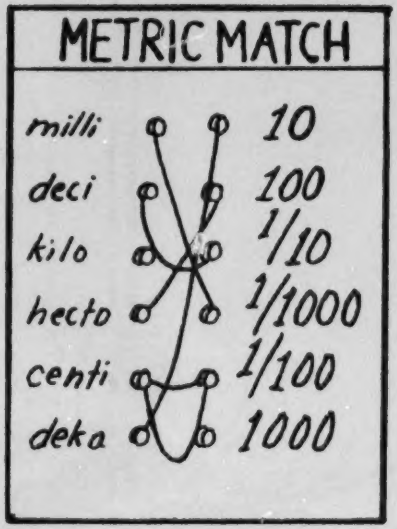
METRIC MATCH

1. Draw "metric match" board as illustrated in the picture. Place metal fasteners on the dots.

2. Attach strings of equal length to each metal fastener in the right hand column. Be sure the strings are long enough to reach all matching pairs.

3. Have students match prefix with numeral by connecting strings.

4. Provide an answer key on the reverse side of the card.



METRIC PICTURE PUZZLES:1

1. Draw a picture on a piece of tagboard and cut it into nine equal pieces.
2. Divide another piece of tagboard exactly the same size as the first into nine equal parts by drawing lines.
3. Put puzzle pieces on top of the whole board and write matching prefix and numeral equivalent on back of puzzle piece and corresponding section of tagboard.
4. Students should place the prefix or numeral on the back of each puzzle piece on top of the matching prefix or numeral on puzzle board.
5. If the pieces form a picture when turned over in order, the child has correctly matched prefixes and numerals.

METRIC PICTURE PUZZLES:2

13

hecto	milli	1000
100	$\frac{1}{10}$	kilo
$\frac{1}{100}$	deka	10

100	$\frac{1}{1000}$	kilo
hecto	deci	1000
centi	10	deka

METRIC MONKEY:1

1. Construct the puzzler as follows:

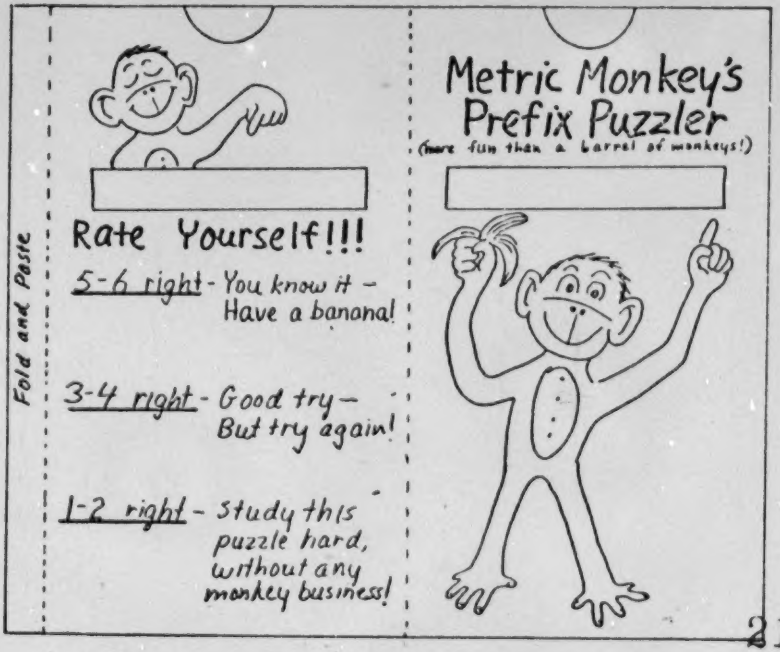
   a. Make the outside folder by enlarging the diagram, as illustrated on card 15, on colored paper (construction or lightweight card stock).

   b. Make the inside as illustrated on card 15 so it can be inserted in the outside folder.

   c. Put the inside in place in the folder and paste the puzzler together.

2. Have students use the puzzlers independently or with others.

METRIC MONKEY :2


Fold and Paste
Rate Yourself!!!
5-6 right - You know it - Have a banana!
3-4 right - Good try - But try again!
1-2 right - Study this puzzle hard, without any monkey business!
Metric Monkey's Prefix Puzzler
(more fun than a barrel of monkeys!)
21

1/1000	milli
1/10	deci
100	hecto
1/100	centi
1000	kilo
10	deka

Side 1 Side 2

FABULOUS FISHING

16

1. Cut out and decorate 12 large tagboard fish. Print a metric prefix or numerical value for a metric prefix on each. Attach a magnet to each fish.

2. Make a fishing pole by attaching a string to a dowel stick. Attach a paper clip or another piece of metal at the end of the string.

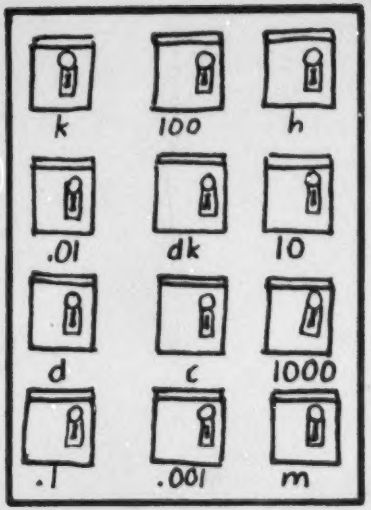
3. Place the fish on a "pond" with the magnet side up. Allow children to fish by using the pole. When the child has picked up a fish he or she has to name the prefix or numerical value that matches what is written on the fish. If the child is not correct, the fish got away and has to be put back in the pond.

GET YOUR FOOT IN THE DOOR

1. Attach 12 book pockets to represent doors to a large piece of tagboard. Draw a door knob and key hole on each. Print a prefix or a numerical value for a prefix below the book pocket as shown on the right.

2. Cut out 12 tagboard feet small enough so they can fit in the pockets. Print a prefix or a numerical value for a prefix on each.

3. Have students match the item on the feet with its match on the door. A match is the prefix and its numerical equivalent.



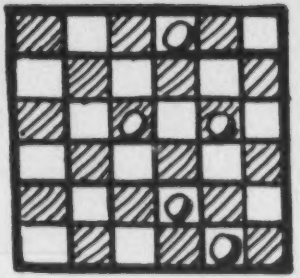
METRIC CHECKER CHECK

1. Obtain a checker board set and print the prefixes and numerical values on the checkers. (Use a magic marker)

2. Have the students proceed to play the game "Checkers".

3. Instruct the students that before they can jump and take the checker they must give the correct prefix or numerical value of the checker(s).

4. Provide an answer key. If incorrect, the student must remove his or her checker from the game.



METRIC DARTS

1. Make a transparency of the dartboard illustrated here.

2. Purchase darts with suction cups on the end of them.

3. Project the transparency on the blackboard.

4. Have the students throw the darts and name the prefix or the numerical value of each. (Provide an answer key for the students.)

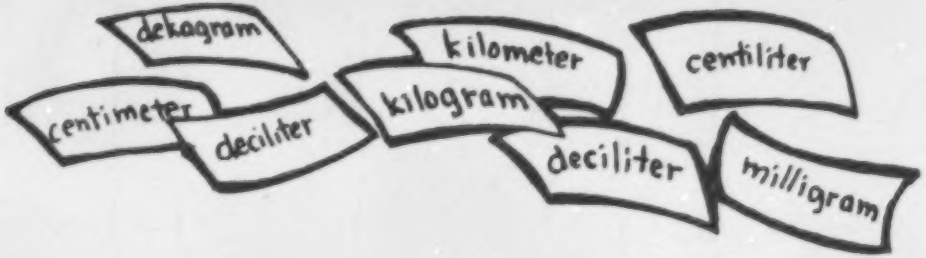
5. A point is given for each correct answer. A point is taken away if the answer is incorrect.

IF I WERE

1. Give each student a slip of paper with different measurements. (Either the three basic terms or metric prefixes)

2. Give each child a turn to complete the following statement,

   "If I were a (name on paper) I would measure a/an/the (an object)."



METRIC MIX-MATCH

1. Reproduce the following words:

RTIEL	OIKL	LIMLI
MRAG	CEHOT	CEDI
ETREM	NITCE	ADEK

2. Give each child a copy.

3. Have the children try to unscramble the words.

4. Have the children check the answer key.

LITER	KILO	MILLI
GRAM	HECTO	DECI
METER	CENTI	DEKA

SMALLER LARGER

22

1. Construct two sets of metric prefixes and numerical values (see below) on index cards. Each set would contain 12 cards.

10,	100,	1000,	1/10,	1/100,	1/1000
deka,	hecto,	kilo,	deci,	centi,	milli

2. Ask for <u>two</u> volunteers to come to the front of the room.
3. Have each student select a card from one of the piles.
4. The students must decide whose card indicates the larger measurement.
5. The student that has the "larger" card remains standing and the student that has the "smaller" card should sit down.
6. Have the rest of the group judge whether or not the students were correct.
7. Students can form teams and keep score (1 point for each correct answer).

LENGTH

decimeter · centimeter · hectometer · kilometer · millimeter

THROW-A-METER

1. Obtain enough "nerf" balls so each student in the group may have one. Or make a "pom pom" fluff ball out of rug yarn.

2. Have each student throw the ball one meter and measure to see who came the closest.

3. Continue the same procedure only vary the measurements.

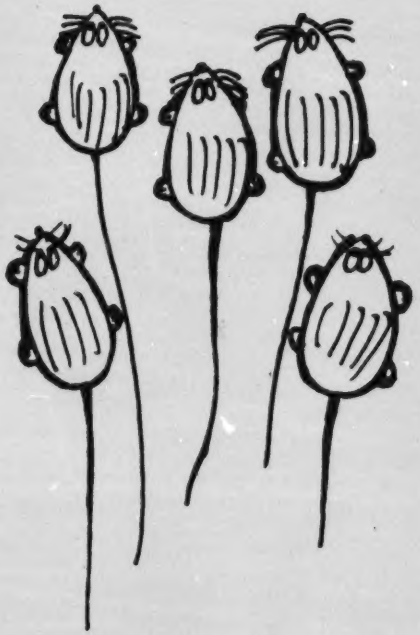
METRIC MICE TAILS

1. Draw mice with different length tails on a piece of tagboard.

2. Have students measure the different length tails.

3. Provide a sheet to record the answers.

4. Develop an answer card so they can correct their own work.



METRIC ROPE

25

1. Make a yarn measuring rope by cutting pieces of very heavy yarn or cord of two colors in lengths so each will measure one meter when tied to another piece of the same length. Tie lengths, alternating colors, to make a 10 meter rope (longer if desired).

2. Have students use the rope to measure distances such as the length of the playground, a city block, or the distances between bases on a baseball diamond. Record five distances measured and have someone else check to see if the measurements agree.

3. If you are measuring very long distances, several children with several ropes could work together.

SO BIG IN METRIC

26

1. Divide students into pairs and give each pair a metric tape measure.

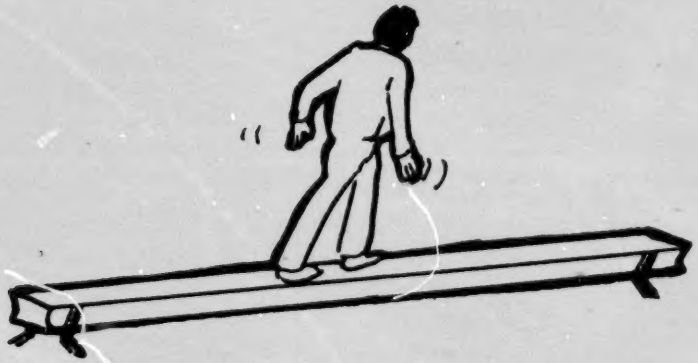
2. Ask the students to measure the height of their partner. Provide a sheet to record the answers.

3. Instruct the students that one partner will raise both his/her arms directly above the head and say "I'm so big in metric", while the other partner measures the new height and records it on the answer sheet.

BALANCE BEAM

27

1. Have each student walk on a balance beam until he or she falls off. Measure the distances from the end of the beam to the point at which each student fell off to see who walked the greatest distance.



LICORICE LENGTH

28

1. Give each student a long (30-50 centimeters) strand of string licorice and have him or her measure it.

2. Have students estimate varying lengths by directing them to eat a given amount of licorice, for example: "Eat one decimeter of licorice."

3. Students can then check their estimates by measuring the remaining piece and subtracting that number from the length of the original piece.

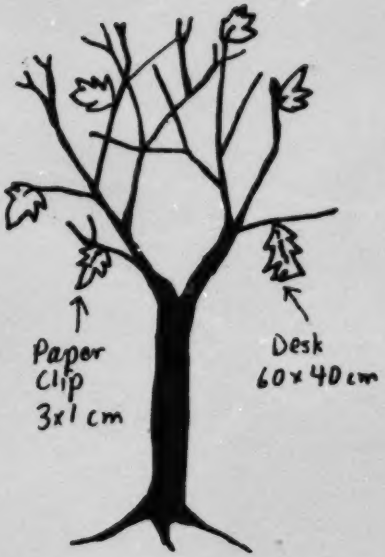
4. Have students keep a continuing record from original length through each subtraction.

METRIC MAPLE TREE

29

1. Cut out a large, leafless tree and mount it on a bulletin board. Also, cut out 30 or 40 maple leaves in the same or a variety of colors.

2. Have children measure objects from the room and record the name and measurement of each object on a leaf. Then, mount the leaf on the tree.



PIN THE TAIL ON THE MONKEY

30

1. Draw a picture of a monkey on a large piece of oil cloth. Pin on a bulletin board. Also cut out of oil cloth several tails. Insert pins in the end of each tail.

2. Have a small group of children play "pin the tail" by having each child, in turn, be blindfolded while attempting to put a tail on the monkey.

3. Have children find out who was closest by measuring the distance from where the tail is suppose to be to each tail pinned on the oil cloth.

METRIC PICTURE PARADE

1. Give each student a piece of drawing paper.

2. Have the students place a line that is 5 cm, 1 dm, 3 cm, 1 cm, etc. anywhere on their paper (about four different lines).

3. Have the students develop a picture using the various lines that they drew.

4. Display the pictures on a bulletin board.

MIGHTY METRIC MEAL

1. Make a picture on a ditto that contains a plate of spaghetti, meatballs, French bread, milk, etc. See illustration.
2. Have the students estimate and measure the length of a spaghetti noodle, the bread, etc. and record their answers.

3. After the students are done measuring, have them color the picture.

METRIC MOOSE

33

1. Make a picture on a ditto of Metric Moose as illustrated here.

2. Have the students first estimate and then measure and record the following:

   a. One antler
   b. Distance from the tips of the antlers
   c. Nose (length and width)
   d. Eyelashes

3. Have the students color the picture.

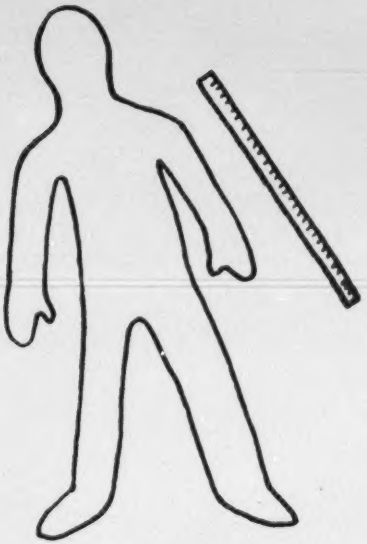
MEASURE ME UP!

1. Divide the group of students into pairs.

2. Take them outside on the playground.

3. Have each student draw around his or her partner with a piece of chalk.

4. Have the students measure features on their own outlines such as height, arms, legs, etc. and record them on an answer sheet.



METRIC TREASURE HUNTERS

1. Tell the students to pretend they are treasure hunters.

2. As treasure hunters they must find five to ten objects in the classroom that are 10 cm or less in length.

3. Have the students record each object and its length on a chart similar to the one below

RANK	OBJECT	LENGTH

4. In the far left-hand column have the students rank their objects (using numbers) from the smallest to the largest in length.

DECIMETER DETECTIVES

1. Give each student a set of cuisenaire rods.

2. Tape the following instructions on a cassette:

> Pretend you are a detective in metric land. Your mission, if you choose to accept it, will be to discover the various combinations that are needed to make a decimeter. We would like to warn you, however, that you might not need all rods. If you fail in this task you will be banned from the metric detective force. This tape will self destruct in thirty seconds.

TREE SPREE

37

1. Take a group of children who are equipped with tape measures, meter sticks, centimeter sticks, and a trundle wheel outside.

2. Have the students measure every dimension of the tree that they can possibly imagine. For example, some dimensions are:

   circumference of tree, finding the longest branch, finding the circumference of a branch, finding the distance between trees, and finding the height of trees.

Use bushes if trees are not available.

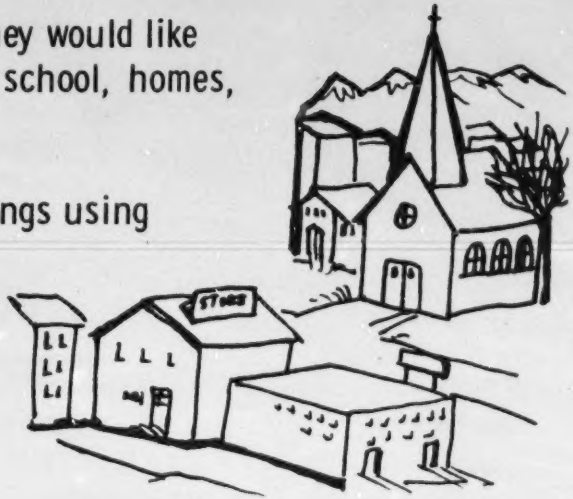
METRIC VILLAGE

1. Provide the students with a variety of materials such as, paper, wood, nails, glue, etc.

2. Have the students decide on buildings they would like to have in their metric village (church, school, homes, etc.)

3. Have the students construct their buildings using metric measurements.

4. Display and name the village.



METRIC GRADUATION HAT

1. As a culminating activity on the metric system, have the students make their own graduation hats.

2. Give each student 2 pieces of construction paper and have them measure and cut a square 3 dm x 3 dm.

3. Hand out tape measures to each student and tell them to measure their heads and then cut a strip of construction paper the circumference of head by 6 cm wide. Tape end of strip together to form the base of the hat.

4. Construct hat by attaching 3 dm x 3 dm square piece to base of hat strip.

5. Measure yarn for tassles and attach to hat.

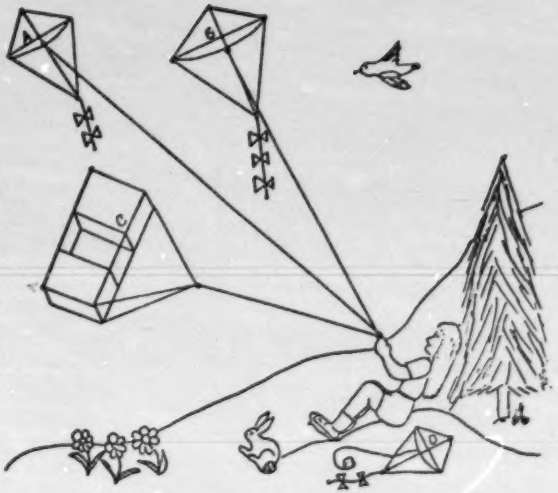
METRIC KITE TAILS

1. Enlarge the diagram on the right onto a ditto master.

2. Give each student a kite tail picture.

3. Explain to the students that their little finger is about 1 cm. wide.

4. Have the students estimate the varying lengths of the kite tails and then have them measure the kite tails using their little finger.



OTHER MEASUREMENTS

kilogram · liter · gram · celsius degree

FEED THE METRIC BUNNY: 1

41

1. Obtain a large refrigerator or appliance box from a local dealer.

2. Disguise the box as a metric bunny by cutting out pieces for eyes, nose, mouth, etc. See illustration below:

FEED THE METRIC BUNNY:2

3. Out of tagboard, construct large carrot cards as illustrated below and write a question on each.

4. On the reverse side of the carrot write the correct answer.

5. Have a child select a carrot, read the question and answer it. If correct, the child may feed the metric bunny. If incorrect, the child must put the carrot back in the "patch" until his or her next turn.

SQUEEZE-A-LITER

1. Obtain one sponge and liter or other volume container for each student.

2. Have each student soak the sponge in water and squeeze it into the container.

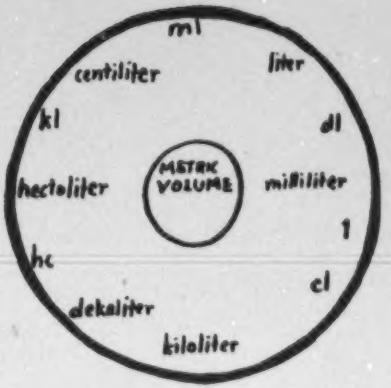
3. See which student can fill the container first with the least number of squeezes.

METRIC VOLUME PIZZA

1. Make a metric volume pizza game by covering and laminating a 6-inch pizza or other round board.

2. Write metric symbols and names on the board (see picture). Write the reverse symbols or letters on clothespins and match by clipping the clothespin to the word on the board or vice versa.

3. Put the correct answer (e.g., the clothespin for the symbol, ml, is marked milliliter) on the reverse side of the board for self-checking.



*Similar boards could be made for length and mass.

THINK METRIC

45

1. Construct a bulletin board with a head of a person and a large empty balloon above the person's head. Label the board "Think Metric".

2. Have the children fill in the balloon with all the metric terms they know.

"GRAM" CRACKERS

46

1. Give each student a "gram" (graham) cracker and have him or her weigh it. Provide a sheet to record the answer.

2. Have the student take a small bite and weigh the cracker again. Record answer.

3. As a last activity before eating the entire cracker, have the student take a big bite, weigh the remaining cracker and record the answer.

*4. Have students find the area of the cracker before and after taking bites.

*Use centimeter grid paper to estimate area.

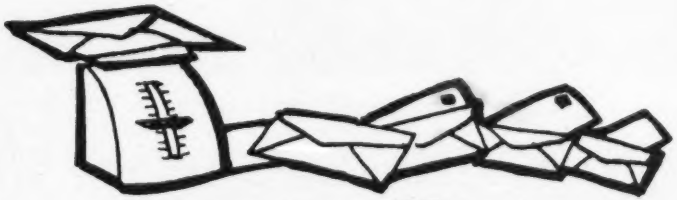
POSTAL PROBLEMS

1. Stuff 8 to 10 envelopes with different amounts of paper.

2. Obtain a postal or diet gram scale.

3. Develop a chart showing postal rates or obtain one from the post office. For instance, a 25 gram letter would require a thirteen cent stamp, etc.

4. Have the children determine the postal rate for each letter by weighing it.



RIGHT ON - ROCK HOUND

48

1. Take the class outside and have each student hunt for a rock.

2. After each student has obtained a rock, compare them to see who has the heaviest or lightest rock.

3. Show the students how to use a metric scale, have them weigh the rocks to see if they were correct in their selection.

4. Have students think of other objects that would have the same mass as their rock.

5. Have students weigh both their rock and the object to see if they were correct.

LITTER PICK

1. Give each student a bag for picking up litter on the school playground or other park.

2. After a certain period of time, bring the bags in and weigh them to see who has collected the most litter.

METRIC MARKET

1. Have each of the students look at home for packaged foods that are labeled with metric units, along with the English units, or alone.

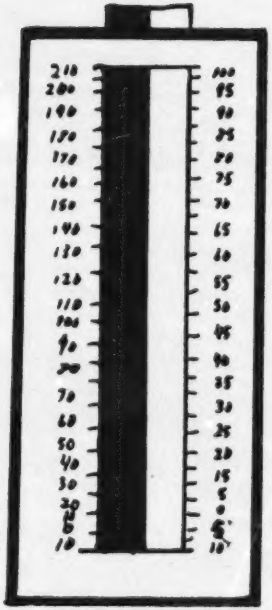
2. When the packages are empty, have the students bring them to school. Construct a store out of a refrigerator box to display all of the items. Have the children make up a name for the store such as "DEKA DISCOUNT".

3. Give each child a chance to be the clerk in the store. Have the "customers" ask for the size of the foods in metric units.

TEMPERATURE SLIDE

1. Make the temperature slider (as illustrated) by printing the Celsius and Fahrenheit scales side by side on a strip of tagboard. Leave a two-inch space in between the two thermometers and cut two slits across the top and bottom of this space. Insert another strip of tagboard through these slits. The strip to be inserted should be nearly 2 inches wide and half black and half white.

2. Have the students push their sliders on the thermometer to certain degrees on either scale to find out the equivalent on the other scale. For instance, you could say "Push the slider on the thermometer to 90 degrees Fahrenheit. What is the equivalent temperature on the Celsius scale?"



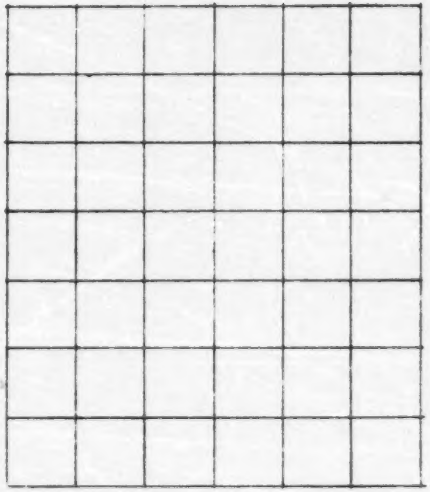
SWEET TOOTH

52

1. Bring sweet objects from home such as doughnuts, cookies and candy bars.

2. Estimate the area of the object.

3. Using centimeter graph paper, place the sweet object on the grid paper and find the area of the object by counting the squares.



Variations: Eat a portion of the sweet object and find the new area.

METRIC MUNCH

53

1. Bring a cake pan of brownies, rice krispies bars, or any other goody to class.

2. Have one child measure the area of the pan in centimeters and have the rest of the class estimate the area of the pan. Compare the estimates with the actual measurement.

3. Have the children determine the area of each piece if they were to divide the pan equally among the entire group.

4. Cut the goody in the pan according to the directions of the students and give each a piece.

LINEAR LEAF

1. Trace around the edge of various sized leaves and objects. Match a string to the perimeter of the shape and determine the perimeter of the leaf in centimeters by measuring the string.

2. Trace around several leaves on centimeter grid paper and determine the area in square centimeters.

3. Estimate the area of the leaf in square centimeters by using the cm^2 grid and counting the squares or parts of squares.

TRAFFIC COPTER REPORT

1. Give the students the following instructions:

   Pretend you are reporting traffic conditions from a helicopter over a large city. Report for two to three minutes using metric units whenever measuring units for length, mass, volume and temperature are appropriate. Tape the report and play it for others. Have them determine how many times a metric unit was used.

2. Suggest to the students that they write a script before attempting to record.